

The Builder.

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Went out the other day to taste some water, and when we had found it, it had no taste, and that was exactly the reason we went for it. "Why, I thought that water-question was settled," a friend said when we told him where we had been; and perhaps inadvertently some of our readers may say the same thing, but they will not repeat it on reflection. The question of the proper supply of proper water to London is not settled, and none but the wilfully blind, or the naturally stupid will say it is,—none but ignoramuses or shareholders, the latter of whom, by the way, merely act as others would do in the same position. We do not usually employ coarse language; but this is too important a matter to mince words upon. The water-supply question is not settled, any more than the drainage of London is settled because one set of hand-tied commissioners after another,—dummies in spite of themselves, according to their own account,—have been appointed, and have met, and have killed their officers and themselves, have spent money without reference to a plan, and have got miserably into debt, without advancing the purpose of their existence a single step. The water-supply question is not settled any more than the burial in towns' question is settled because an Act of Parliament has been passed which permits amelioration but does not enforce it. The water-supply question will not be settled, and must not be considered settled so long as we have any but the best water, both in a sanitary and an economical point of view, and the most efficient supply possible. It is really a very important question for the metropolis, involving health and money to a large amount; a question which should be settled—but is not. Well-informed, honest, and able men may express themselves contented with the present arrangement as a sacrifice to expediency; but they must feel that this cannot last, and ought not to last. It is not the course they would take in their own arrangements: it is still less the course which should be pursued by a wealthy and powerful community.

The place we went to was Farnham, where the hill-top water, as recommended by the Board of Health, in preference to the valley-bottom water pumped up for the supply of London, is used for the town, where about 800 houses, as we understand, with a population of 7,000 persons, are supplied with it.* We were informed that "the whole supply of the town is derived from the drainage of only two acres of the hill side; including two small hollows, formerly moist and boggy, but since the drainage perfectly dry. This little tract is traversed by one main pipe, of ordinary burnt clay, about 6 inches in diameter, into which run twenty or thirty ramifying feeders, of about 3 inches capacity. The water with which the sandy hill is saturated (supplied by the rainfall on its surface) oozes through these subterranean feeders in an unfailing flow, sufficient

* The whole number of houses there is 2,300; population, 11,700.

for the constant replenishment of the reservoir that supplies the town!" The pipes themselves are of course buried out of sight, but the tracks of the trenches made for their reception are visible, and serve to illustrate the plan of the capillary system by which the sun-distilled rain-water and some constant springs are collected, immediately after natural filtrations through a layer of silicious sand. It is bright, pellucid, and tasteless; and by the application of various tests its freedom from lime, &c. was shown, and that it averages about 2½ degrees of hardness. Let us say here, that in calculating these degrees of hardness, distilled water is taken as 0, and that each degree of hardness means as much as would be imparted to a gallon of distilled water by the lime contained in one grain of chalk. To destroy a degree of hardness requires about 2 oz. of soap, which is destroyed without other effect; thus a water of 2½ degrees of hardness, for example, will destroy about 5 oz. of soap, and a water of 12 degrees, 24 oz. of soap, to put them into the same condition for cleansing as distilled water. The degree of hardness of Thames water may safely be taken as the latter of these figures, 12,—some chemists say 16; and the loss which this causes in the items of soap and soda may at once be made obvious. So, too, with tea, and in brewing and other domestic operations. In the item of washing alone it is shown that a saving of probably 250,000*l.* per annum might be effected to the metropolis by the introduction of soft water.

We have again and again, before now, given the facts from which these inferences are made, but it is necessary to say a thing often before it is heard, and we will therefore once more produce two or three witnesses.

"In Farnham, I find, that at one of the largest washing establishments it is stated, in one case, by Mrs. Corps, 'we now do with the soft spring water the same amount of washing with 4 lbs. of soap that formerly took 6½ lbs. of soap and 6½ lbs. of soda with the hard well-water or the river water.' Putting soap at 6*d.* and soda at 1½*d.* per lb. this gives the respective expense of soft and hard water as 2*s.* to 4*s.* 0*d.* or as 1 to 2.

Again, in the second case, Mrs. Hayes, of Farnham, says, 'with soft water, 6 lbs. of soap does now the same washing that was done by 9 lbs. of soap and 9 lbs. of soda formerly.' Here the expense of soft water is to hard water as 1 to 1·9.

Take a third case: Mr. Edwards, plumber, of Farnham, says, 'for upwards of thirty-five years I have employed a brasier and assistants, for whom I find soap to wash when leaving their work. As long as the hard water was in the house, the expense of soap per week was 3*d.*; having now soft water, the same washing is done for 1*d.*' Soft water is here as 1 to 3. This is an outside case, from the dirty nature of brasier's work, but affords valuable proof of the comparative solvent powers of the two waters with soap."

Some who have objected to the views of the Board of Health have urged, that as for the greater part of the clothes washed hot water is used, and in heating the water the lime is deposited in the kettles and boilers, a great part of the hardness disappears. But here, and in the evidence of other witnesses, are given practical results without reference to theory.

As to the waste in tea, at Bolton, the report of the Board of Health says, a change from water of about 5½ degrees of hardness, not half

the hardness of Thames water, to a water of about 2 degrees, saved about 1*l.* a week out of 2*l.* 10*s.* in the union workhouse.

Many medical men have given evidence against the use of hard water. Dr. Leech, of Glasgow, says, various diseases have become less frequent where soft water has been substituted. Dr. Sutherland has arrived at the conclusion, from practice in Liverpool, that the use of hard water in certain constitutions materially deranges the health. When we say that every gallon of water supplied to London contains sixteen grains of chalk (if it does contain quite so much as this), its importance does not strike so forcibly as when it is remembered that these give in the day's supply to the metropolis no less than twenty-six tons of lime!

This is a new sort of *Insolvency*, wherein all are *whitewashed*, whether they will or not.

Lime, however, is not the only adventitious and deleterious matter in the water of the Thames, our common sewer! And what the use of impure water will do during the prevalence of an epidemic, the records of the last visit of cholera to our shores prove by fearful facts.

Opinions differ as to the certainty of finding sufficient water on the high grounds to supply the quantity required, and as to the cost of effecting it. Mr. F. O. Ward, who has warmly taken up the advocacy of this mode of supply, and was the leader of the expedition on the occasion to which we have referred, argues that the Farnham artificial springs were found cheaply available for the supply of 300 houses, and that these little works a thousand times repeated would obviously suffice for the supply of the 300,000 houses composing the metropolis; the cost being relatively less in the second case than in the first, owing to the reduction of establishment charges by the larger scale of operation.

The Board of Health estimate the quantity of water required to meet the present necessities of the metropolis at forty millions of gallons per day: Mr. Warren, one of their opponents, puts it at fifty-five millions. He says, in explaining one of his items, "In designing a system of water supply which is to be permanent for London, is the possibility of some day acquiring the benefits of public fountains to be precluded? Is the Londoner never to see even in prospect his city ornamented, its atmosphere refreshed, and its health improved by such pleasant means? Is the country-born artisan, deep buried in the miasmata and sloughs of the metropolitan working districts, never to find in this huge city some fancied realisation of the weak memories of those running streams and bubbling fountains that his childish eyes loved to watch? Oh! ye ruling magistrates, for the love of heaven, and that glorious nature which is dear to the poor man as to yourselves, and which you can enjoy in peace and leisure, remember the smiling artisan, give him bright light, give him fresh air, give him clear running water, and you give him health and cheerfulness for his lot, and will unfailingly draw down unnumbered blessings on yourselves." Loudly we echo this: give him pure air, good water; health and cheerfulness. Mr. Napier states that the gathering grounds

* Report "On the Proposed Gathering Grounds for the Supply of the Metropolis from the Soft-water Springs of the Surrey Sands." Addressed to the General Board of Health. By the Hon. William Napier. 1851.

* "The Report of the Board of Health on the Supply of Water to the Metropolis weighed in its own balance and found wanting." By J. Neville Warren, C.E. 1850.